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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/797,004
Filing Date: March 11, 2004
Appellant(s): HERZHAFT ET AL.

Alan E. Schiavelli
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/13/2008 appealing from the Office action mailed 10/16/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,904,603	JONES	2-1990
4,299,794	KELLEY	11-1981

4,397,957	ALLISON	8-1983
4,994,117	FEHDER	2-1991

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US 4,904,603) in view of Kelley (US 4,299,794).

Regarding claim 1, Jones discloses a method for penetrating a geological formation by a well drill from the surface having a drilling fluid (mud) that travels from the formation to the surface (column 1, lines 8-20); a drilling fluid having a pH greater than 8 (see Figure 13); and a given quantity of return fluid sampled at the surface, transferred to a cell, and measured for pH (column 5, lines 42-65). Jones does not disclose, however, acidifying said fluid to a pH of less than 4 to measure the CO_2 level of the gas in the cell and in the geological formation. Kelley discloses a system for measuring the carbon dioxide level of the gas in a cell by acidification (column 1, lines 55-68) with a solution of pH less than 3.0 (column 2, lines 40-42). According to Kelley, this method of measurement "provides an accurate analysis of the carbon dioxide contents of fluids in an analysis cycle of short duration" (column 2, lines 49-51). It would have been obvious to one having ordinary skill in the art at the time the invention was made to sample the CO_2 quantity in the fluid of Jones via the acidification step of Kelley since the annular gas pressure and contents are very important to drilling procedures and well known in the art to be. The invention of Kelley is one such method for detecting CO_2 and is applicable to industrial processes (column 2, lines 20-23).

Regarding claim 2, Jones discloses taking into account the quantity of carbonate supplied by the geological formation and/or by the additives by choosing an appropriate pH (see column 9, lines 18-20).

Regarding claim 3, Kelley discloses a reaction mixture with pH of approximately 2 (see column 2, lines 40-42).

Regarding claim 6, Jones discloses a method wherein the sampling rate is determined according to the fluid travel rate (see column 13, lines 17-22).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones and Kelley as applied to claim 1 above, and further in view of Allison (US 4,397,957).

Regarding claim 4, Jones and Kelly do not disclose an inert gas scavenging the internal space of the cell. Allison, however, discloses an inert gas sweeping an internal cell for CO_2 detection (see Abstract). According to Allison, "this step is important where the sample being analyzed contains substances that will release a halogen gas into the inert gas stream" to prevent interference in measurement (column 2, lines 2-4). The fluids of Jones contain chloride ions (column 5, lines 42-65) that would be released when acidified as in Kelley. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use an inert gas to sweep the inside of the cell as in Allison for evacuation of released impurities when the inventions of Jones and Kelley are combined so as to obtain accurate CO_2 readings.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones and Kelley as applied to claim 2 above, and further in view of Fehder (US 4,994,117).

Regarding claim 5, neither Jones nor Kelley discloses running the CO_2 measurement method on a given volume of initial fluid before contact with the formation. Fehder, however, does disclose a baseline concentration of carbon dioxide (column 6, line 52). It would have been obvious to one having ordinary skill in the art at the time the invention was made to measure the initial concentration of CO_2 to determine a baseline as the initial concentration is a necessary measurement to determine the change in concentration.

Claims 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones in view of Kelley and in further view of Allison.

Regarding claim 7, Jones discloses a device for penetrating a geological formation by a well drill from the surface having a drilling fluid that travels from the formation to the surface (see column 1) with a drilling fluid having a pH greater than 8 (see Figure 13); a cell to hold said quantity of liquid (see **12** in Figure 1) with an injection system (column 6, lines 9-13); and means for sampling a given quantity of return fluid at the wellhead and means for measuring for pH (see column 5)

Jones does not disclose, however, means for acidifying product into said cell and means for measuring the quantity of CO_2 contained in the cell. Kelley discloses a system for measuring the carbon dioxide level of the gas in a cell by acidification (column 1, lines 55-68) with a solution of pH less than 3.0 (column 2, lines 40-42). According to Kelley, this method of measurement "provides an accurate analysis of the carbon dioxide contents of fluids in an analysis cycle of short duration" (column 2, lines 49-51). It would have been obvious to one having ordinary skill in the art at the time the

invention was made to sample the CO_2 quantity in the fluid of Jones via the acidification step of Kelley since the annular gas pressure and contents are very important to drilling procedures and well known in the art to be. The invention of Kelley is one such method for detecting CO_2 and is applicable to industrial processes (column 2, lines 20-23).

Neither Jones nor Kelly discloses means for inert gas scavenging of the internal space of the cell. Allison, however, discloses an inert gas sweeping an internal cell for CO_2 detection (see Abstract). According to Allison, "this step is important where the sample being analyzed contains substances that will release a halogen gas into the inert gas stream" to prevent interference in measurement (column 2, lines 2-4). The fluids of Jones contain chloride ions (column 5, lines 42-65) that would be released when acidified as in Kelley. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use an inert gas to sweep the inside of the cell as in Allison for evacuation of released impurities when the inventions of Jones and Kelley are combined so as to obtain accurate CO_2 readings.

Regarding claim 8, Jones discloses control means for drilling by monitoring pH (see column 3, lines 37-42). Jones does not disclose, however, acid injection control. Kelley discloses a controller for the cell (see **204**, Figure 7). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use said controller for acid injection since the Jones reference discloses control for monitoring pH and acid injection would be a commonly known way to do so.

Regarding claim 9, Kelley discloses means for measuring the quantity of CO_2 by an infrared cell (see column 1, line 68 through column 2, lines 1-2).

Regarding claim 10, Jones discloses control means for drilling and sampling by monitoring pH (see column 3, lines 37-42). Kelley discloses a controller for operations within the cell (see **204**, Figure 7). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use said controller for all of steps listed in claim 10. The rate, by definition, is determined by the fluid flow rate and is in Jones (see column 13, lines 17-22).

Regarding claim 11, Kelley discloses a means for measuring the internal pressure of said cell (column 2, lines 4-9).

Regarding claim 12, Jones discloses means for measuring the temperature of said cell (column 3, lines 48-50). Appellant does not disclose specific means for regulation. The ability to measure temperature and the inclusion of control mechanisms in Jones includes the ability to regulate temperature according to appellant's means for language.

(10) Response to Argument

Appellant agrees with examiner that references teach all the disclosed limitations of Appellant's claims, but argues that no motivation is provided by the references to combine the references. Specifically, on page 7 of the Appeal Brief, Appellant stipulates that "nothing in the Jones et al. patent or the Kelley patent provides any apparent reason why one of ordinary skill in the art would have provided an additional monitoring function of the drilling mud in Jones et al. to monitor the carbon dioxide level."

In response to Appellant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can be established by combining

or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or *in the knowledge generally available to one of ordinary skill in the art.* See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). It is important to note here that Appellant's original specification filed on 3/11/2004 establishes CO_2 measurement in geological formations to be known motivation to determine methods of sampling in situ (see paragraphs 1 and 2 of page 2). The Jones reference would therefore benefit from CO_2 measurement and the Kelley reference provides a known means with which to do so.

Appellant argues on page 7 of the Brief that Kelley is directed towards measuring the carbon dioxide in serum and plasma. Examiner respectfully disagrees.

In response to applicant's argument that Kelley is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the annulus gas contents of a geological formation are crucial when drilling using drilling muds. CO2 is a commonly occurring, underground gas which has the potential to be very much disruptive to the drilling process—as one skilled in the art knows well, this is a primary motivation to use drilling fluids at all (Jones teaches this). Various methods of detection during for this process exist and Kelley is one such known method. Kelley

discloses an embodiment on a micro-scale, but also discloses the ability to apply on the process on a macro scale such as that of Jones..

Appellant argues on page 8 of the Brief that the Allison reference fails to remedy the basic deficiencies of the Jones and Kelley references and it is unclear as to why one of ordinary skill in the art would have reason to sweep a gas in either process. Examiner respectfully disagrees.

As noted in the rejection above, the purpose of combining the Allison reference with the Jones and Kelley references is for the express purpose of remedying their basic deficiencies *when combined*. The combined method of Jones and Kelley would effect unwanted gases that need be swept; Allison provides a solution to just this issue.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Imran Akram

/Imran Akram/

Examiner, Art Unit 1795

Conferees:

/Alexa D. Neckel/

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